Great Lakes Wetlands Conservation Action Plan

2005-2010 Highlights Report

glwcap.ca

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Conservation Ontario

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Killdeer. Simon Dodsworth

Wild Rice. Sam Brinker

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Abbreviations

ANSI	Area of Natural and Scientific Interest
CA	Conservation Authorities
CLOCA	Central Lake Ontario Conservation Authority
COA	Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem
CVC	Credit Valley Conservation
CWS	Canadian Wildlife Service
DRCWMP	Durham Region Coastal Wetland Monitoring Project
DUC	Ducks Unlimited Canada
EC	Environment Canada
ESA	Environmentally Significant Area
GIS	Geographic Information System
GLCWC	Great Lakes Coastal Wetland Consortium
GLWCAP	Great Lakes Wetlands Conservation Action Plan
GLWQA	Binational Great Lakes Water Quality Agreement
IJC	International Joint Commission
NCC	Nature Conservancy of Canada
NVCA	Nottawasaga Valley Conservation Authority
OEHJV	Ontario Eastern Habitat Joint Venture
OMNR	Ontario Ministry of Natural Resources
OWES	Ontario Wetland Evaluation System
PSW	Provincially Significant Wetland
SOWCA	Southern Ontario Wetland Conversion Analysis
TRCA	Toronto and Region Conservation Authority
U.S.	United States

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Regina Varrin

INTRODUCTION

River Otter. Simon Dodsworth

Wetland conservation in the Great Lakes Basin is now more important than ever. The *State of Ontario's Biodiversity 2010* reports on the status and trends of 29 indicators related to pressures on Ontario's biodiversity, the state of Ontario's biodiversity, and conservation and sustainable use. The wetland indicator, based on analysis conducted by Ducks Unlimited Canada (see *Southern Ontario Wetland Conversion Analysis* see page 8), revealed that despite their importance, wetlands in the Mixedwood Plains continue to be lost or destroyed due to development. By 2002, the wetland area in southern Ontario was estimated to have been reduced by over 1.4 million hectares (72 percent) of the total pre-settlement wetland area.

The Great Lakes Wetlands Conservation Action Plan (GLWCAP) was developed in 1994 to enable government and non-government partners to work together more effectively to conserve the remaining wetlands in the Great Lakes Basin. Implementation of the GLWCAP is coordinated by a team of representatives from Environment Canada (Canadian Wildlife Service), the Ontario Ministry of Natural Resources, Conservation Ontario, Ontario Nature, the Nature Conservancy of Canada (NCC), and Ducks Unlimited Canada (DUC). The partners bring a variety of perspectives, skills and expertise to the table, and work on milestones according to their respective strengths.

The GLWCAP is the implementation mechanism for the 25-year Strategic Plan for Wetlands of the Great Lakes Basin. It complements federal and provincial policy and supports intergovernmental efforts including the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) and the binational Great Lakes Water Quality Agreement (GLWQA).

The GLWCAP is organized into eight long-term strategies encompassing all aspects of wetland conservation. The milestones, or specific actions within each strategy, evolve in response to advances in science and technology, emerging issues, and progress made toward conserving wetlands. Some milestones are discrete actions with a definite endpoint while others are ongoing.

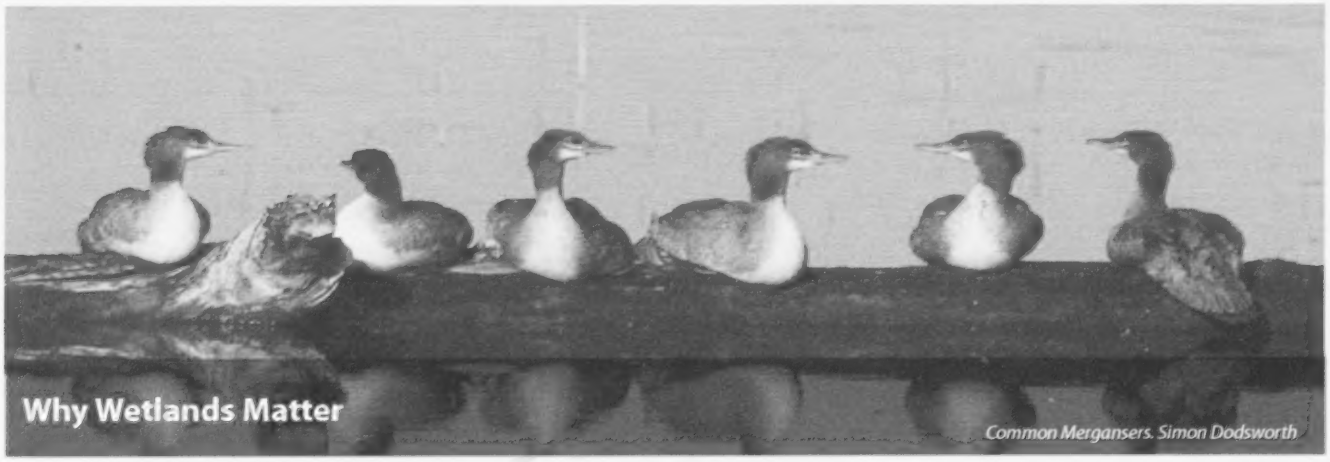
Phase Three of the GLWCAP began in 2005 and drew to a close in 2010. In this highlights report, the fifth in its series, the GLWCAP partners assess and report on progress, recognize achievement, and identify gaps to be addressed in the coming fourth phase of GLWCAP. The reports are a testament to the power of partnership, and to more than 15 years of wetland conservation action.

Lake Superior coastal marsh. Wasyl D. Bakowsky

Partnership for Protection: The Canada-Ontario Agreement

The Governments of Canada and Ontario have been partners for nearly 40 years in the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA). The COA helps Canada meet its obligations under the Great Lakes Water Quality Agreement (see page 26), signed by Canada and the United States in 1972 and amended in 1987. The COA also directs how the provincial and federal governments will work together to improve the health of our Great Lakes and address specific problems such as the spread of aquatic invasive species.

Under the latest COA (2007-2010), Canada and Ontario jointly invested over $100 million to clean up and restore the Great Lakes for future generations. Hundreds of partners also matched and leveraged these funds by investing in hundreds of projects, including projects to restore fish and wildlife populations and their habitats, evaluate and conserve coastal wetlands, protect species at risk, monitor fish populations, prevent the spread of aquatic invasive species, and conduct research and monitoring on Great Lakes aquatic ecosystems.



Why Wetlands Matter

Common Mergansers. Simon Dodsworth

Wetlands are one of the most productive ecosystems in the world, with greater species diversity, nutrient recycling and niche specialization than most other ecosystems. Wetlands are important areas for plant life, animals and societal health and are also comparable to rainforests and coral reefs in their overall productivity.

Before settlement, a rich mosaic of wetlands occurred throughout southern Ontario, from lush coastal marshes to headwater swamps. Today, less than one third of these original wetlands remain and wetland losses are continuing (see page 8).

Part of the reason is that for many years, wetlands were thought of as unproductive land. They were drained or filled for agriculture or development. More recently, the importance of conserving them has become increasingly apparent with the recognition that wetlands provide vital habitats, key ecosystem services in support of human health, and offer unique recreational opportunities.

Wetlands improve the quality of our waters. They slow drainage flows from developed areas, both urban and rural, reducing floods, filtering out pollutants and trapping sediments. They are vital in storing water and helping to prevent floods. They also play an increasingly important role in buffering climate change effects with world-wide stores of carbon in wetlands almost equal to atmospheric carbon levels.

More and more, the importance of wetlands in connecting our watersheds and Great Lakes throughout the basin has come into focus. In this context, their water quality functions are even more critical. Without wetlands, the water in the basin that 30 percent of Canadians rely on would be in jeopardy. Our health and the health of wetlands are directly connected.

STRATEGY 1

Increase Awareness and Commitment to Protecting Wetlands

Regina Varrin

Publicize information concerning wetland values, protection, rehabilitation, policies and regulations, and encourage involvement by individuals, groups, corporations and industries in all aspects of Great Lakes wetlands protection and rehabilitation.

Milestone		Percent Complete by 2010 ("+" indicates 'ongoing')
1.1	Encourage wetland conservation by publicizing the societal, ecological and economic values of wetlands. This may involve developing, publishing and distributing factsheets, brochures, educational packages and/or newsletters, as well as the delivery of extension workshops to targeted audiences.	75% +
1.2	Regularly update and maintain a publicly accessible GLWCAP website.	100% +
1.3	Revise and re-publish the GLWCAP publication "Working Around Wetlands: What You Should Know".	75%
1.4	Develop/update educational materials promoting the role of wetlands within the hydrological cycle, Great Lakes tributary watersheds and the Great Lakes Basin (i.e., a landscape level perspective).	100% +

Citizen engagement in wetland protection is critical to overall conservation efforts. Public education and outreach is the key to raising awareness and empowering all citizens to make a difference. By communicating our shared values we are all joined in working toward a common goal – wetland conservation.

Making Wetland Conservation a Public Priority

2005

- *Wetlands Mean Life.* 2005. Environment Canada, poster.

2007

- *Conservation Options – Conservation Easements as Ecological Gifts.* 2007. Environment Canada, factsheet.
- *Minesing Wetlands Biological Inventory.* 2007. Nature Conservancy of Canada, 123pp.
- *Minesing Wetlands Natural Area Conservation Plan.* 2007. Nottawasaga Valley Conservation Authority and Nature Conservancy of Canada, 45pp.
- *Skunk's Misery Natural Area Conservation Plan.* 2007. The Thames Talbot Land Trust and Nature Conservancy of Canada, 62pp.
- *Species at Risk in Ontario.* 2007. Environment Canada, poster.
- *Watershed Connections.* 2007. Conservation Ontario, DVD.

2008

- *Southern Norfolk Sand Plain Natural Area Conservation Plan.* 2008. Nature Conservancy of Canada, 112pp.
- *Wetland Ecological Functions Assessment: An Overview of Approaches.* 2008. Environment Canada, Canadian Wildlife Service, Technical Report Series Number 497, 59pp.

2009

- *The Beautiful Lake: A Binational Biodiversity Conservation Strategy for Lake Ontario.* 2009. Lake Ontario Biodiversity Strategy Working Group, 40pp (+appendices).
- *Great Lakes Coastal Wetland Ecosystem. In: State of the Lakes Ecosystem Conference 2008: Background Paper, Near Shore Areas of the Great Lakes.* Environment Canada and United States Environmental Protection Agency, 11pp.
- *Minesing Wetlands Property Management Plan*, 2009-2014. 2009. Nottawasaga Valley Conservation Authority and Nature Conservancy of Canada, 95pp.
- *Desktop Hydrogeological Review of the Minesing Wetlands.* 2009. Nottawasaga Valley Conservation Authority and Nature Conservancy of Canada, 32pp.

Conservation Ontario

2010

- *Ontario's Biodiversity Strategy Progress Report 2005-2010.* 2010. Ontario Biodiversity Council, 68pp.
- *Significant Wetlands and the Ontario Wetland Evaluation System* 2010. Ontario Ministry of Natural Resources, fact sheet.
- *Southern Ontario Wetland Conversion Analysis.* 2010. Ducks Unlimited Canada, 23 pp (+ appendices).
- *State of Ontario's Biodiversity 2010.* 2010. Ontario Biodiversity Council, 121pp.
- *State of Ontario's Biodiversity 2010 – highlights report.* 2010. Ontario Biodiversity Council, 49pp.
- *Significant Wetlands and the Ontario Wetland Evaluation System.* 2010. Ontario Ministry of Natural Resources, fact sheet.
- *Wetland Restoration.* 2010. Ontario Ministry of Natural Resources, fact sheet.
- *Wetlands are Important* 2010. Ontario Ministry of Natural Resources, fact sheet.
- *What are Wetlands.* 2010. Ontario Ministry of Natural Resources, fact sheet.
- *Wetlands in a Watershed Context.* 2010. Ontario Ministry of Natural Resources, fact sheet.

Wetlands and Watershed DVD

In 2007, Conservation Ontario produced *Watershed Connections* – an animated DVD that introduces watersheds and how they work. Users can explore key concepts around watershed characterization, discover the importance of stewardship activities and learn about conservation authorities' role in integrated watershed management including source water protection and wetland conservation.

A new DVD focusing on wetlands was released in 2010. *Wetlands: Workhorses of Our Watersheds* will help introduce stakeholders including municipalities and community groups, with concepts and information about Ontario's wetlands and their role in watershed health.

The content of both DVDs is available online at:
www.conservationontario.ca/resources/multimedia/multimedia.html

STRATEGY 2

Improve Wetland Science, Data and Monitoring

CWS fieldwork, Hay Bay, Lake Ontario
© Denby Sadler, CLOCA

Understanding the role of wetlands within a broader ecosystem context is critical to proactive conservation efforts. Furthering the science and promoting standardization in data collection and monitoring techniques help to protect our Great Lakes wetlands by providing valuable information on their status within the basin landscape.

Southern Ontario Wetland Conversion Analysis

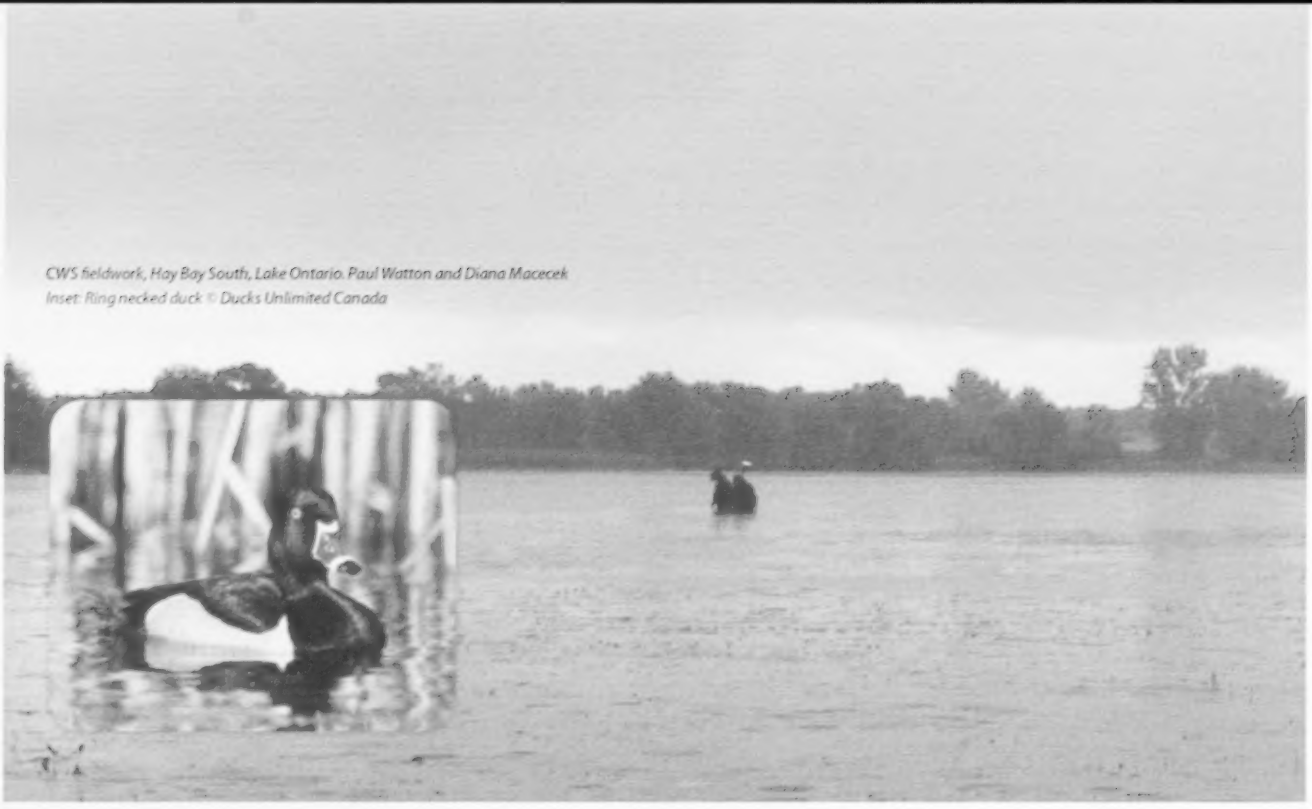
Despite the tremendous efforts to protect and restore wetlands across the southern Ontario landscape, overall wetland loss continues. An understanding of wetland distribution, conversion rates and trends over time is needed to assess the status of wetlands, enhance our understanding of the impacts of human activities, as well as the effectiveness of stewardship efforts.

A state of the art 1987 Environment Canada study assessed wetland extent over three points in time and provided the best measure of wetland status and trends across southern Ontario up to 1982. Since then, the Southern Ontario Wetland Conversion Analysis (SOWCA) has converted the methodology of the original study into a Geographic Information Systems (GIS) based one. This analysis builds on the 1987 study, extending the estimates of wetland status and trends in large wetlands (> 10 hectares), not including coastal wetlands, across southern Ontario to the year 2002, thus becoming the "fourth approximation". The results of the analysis were used to report on the losses of wetlands in the Mixedwood Plains Ecozone of southern Ontario between 1800 and 2002 in the *State of Ontario's Biodiversity 2010*.

Conduct and facilitate study of wetland functions, status and trends to improve understanding, communicate values and set priorities for protection and rehabilitation.

The full report can be found at:
www.ducks.ca/aboutduc/news/archives/prov2010/pdf/duc_ontariowca.pdf.

Marsh. Sam Brinker



CWS fieldwork, Hay Bay South, Lake Ontario. Paul Watton and Diana Macecek
Inset: Ring necked duck © Ducks Unlimited Canada

Milestone		Percent Complete by 2010 ("+" indicates 'ongoing')
2.1	Complete and make available a database to electronically store information for Great Lakes coastal wetlands evaluated using the Ontario Wetland Evaluation System (OWES).	75%
2.2	Continue work to develop a modified provincial wetland evaluation system using remotely-sensed information, GIS technology and field information to identify wetlands and evaluate their ecological significance.	50%
2.3	Continue wetland ecosystem monitoring and assessment at a variety of spatial and temporal scales (e.g., Durham Region Coastal Wetland Monitoring Project), including promotion and enhancement of a binational Great Lakes wetland monitoring program (e.g., the community-based Marsh Monitoring Program, Great Lakes Coastal Wetlands Consortium indicator development).	75%
2.4	Continue to investigate, assess and report on the status and trends in coastal wetland health (e.g., via participation/partnership with the State of the Lake Ecosystem Conference (SOLEC) and the Great Lakes Coastal Wetlands Consortium).	75%
2.5	Undertake the Wetland Conversion Analysis project to calculate new estimates of wetland loss and gain and investigate temporal trends in wetland conversion in Southern Ontario.	100%
2.6	Investigate the hydrological functions of how wetlands contribute to maintaining/enhancing drinking water quality and the hydrological connectivity of wetlands to the broader watershed/sub-watershed. Develop case studies as needed.	25%
2.7	Develop protocols for monitoring wetlands and for assessing wetland functions and encourage their implementation.	75%
2.8	Develop case studies to quantify Ecological Goods and Services for Ontario specific wetlands based on known ecological functions.	75%
2.9	Prepare a research paper and/or develop a document summarizing 'Best Management Practices' for managing invasive Common Reed, Phragmites australis.	75%
2.10	Encourage a federal-provincial data sharing and data use agreement that facilitates interagency collaboration and communication across shared programs (including biodiversity, species at risk, wetlands, forests and other natural heritage areas).	25%

Yellow-headed blackbird. Jesse Achtenberg/US Fish & Wildlife Service

Distribution of Wetlands

Estimates from the SOWCA place settlement (c.1800) wetland extent in southern Ontario at more than two million hectares. This is equivalent to 25 percent of this ecozone's total area (Figure 1a). At that time, the highest concentration of wetlands occurred in counties of southwestern and eastern Ontario with 50 to 85 percent of their total area covered by wetland.

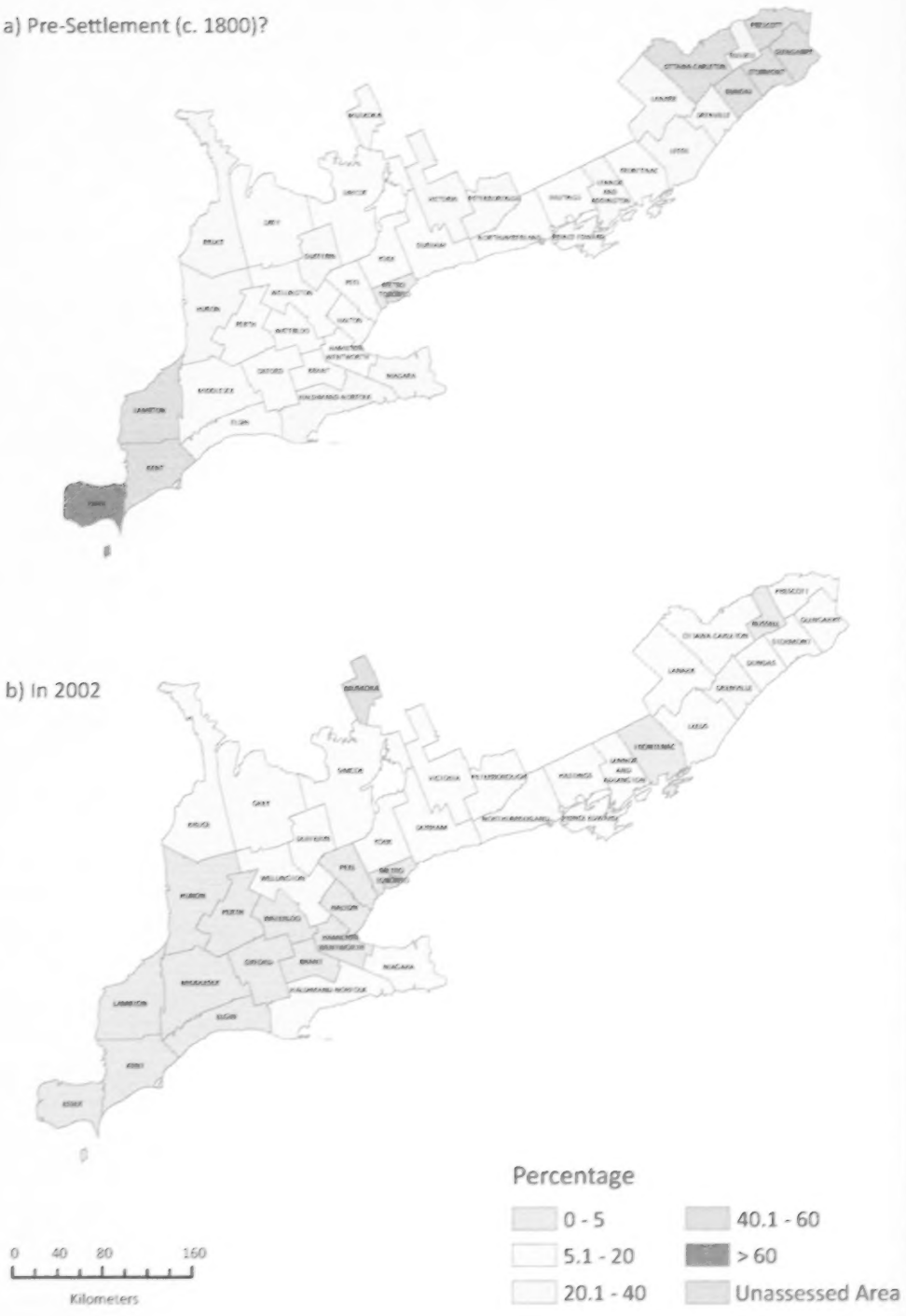


Figure 1: Percentage of county as wetland in 1800 and 2002.

Maps courtesy of Ducks Unlimited Canada

Wetland Conversion since Pre-settlement (c.1800) to 2002

By 2002, the wetland area in southern Ontario was estimated to have been reduced by over 1.4 million hectares (72 percent) of the total pre-settlement wetland area. The largest losses of wetlands have occurred in counties with the greatest concentration of pre-settlement wetlands (southwestern Ontario and parts of eastern Ontario, Figure 2).

Conversion to agricultural lands (field and forage crops, specialty crops, nurseries, rural properties and idle lands), urban brown fields, hydro right-of ways, edge of transportation corridors and clearings within forests accounted for most of the losses. Built-up lands were a significant factor in the loss of wetlands within the Golden Horseshoe.

Summary

The results of the SOWCA study to 2002 should be considered a regional estimate of wetland conversion trends. Similar to the 1987 study, it measured trends within large, inland wetlands only and therefore provides but a conservative estimate of wetland loss. Since conversion trends of coastal wetlands and wetlands below the 10 hectare threshold are not reflected in the analysis, a separate effort is required. If small and coastal wetlands were included in these estimates, overall wetland losses would be much greater, driving home the critical and growing need to protect and restore wetlands.

Technical and Steering committees were comprised of members from Ducks Unlimited Canada (DUC), Environment Canada (EC), the Ontario Ministry of Natural Resources (OMNR) and the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA). Financial support for this project has been provided by DUC, EC, OMNR, OMAFRA and the Ontario Niagara Escarpment Commission (NEC).

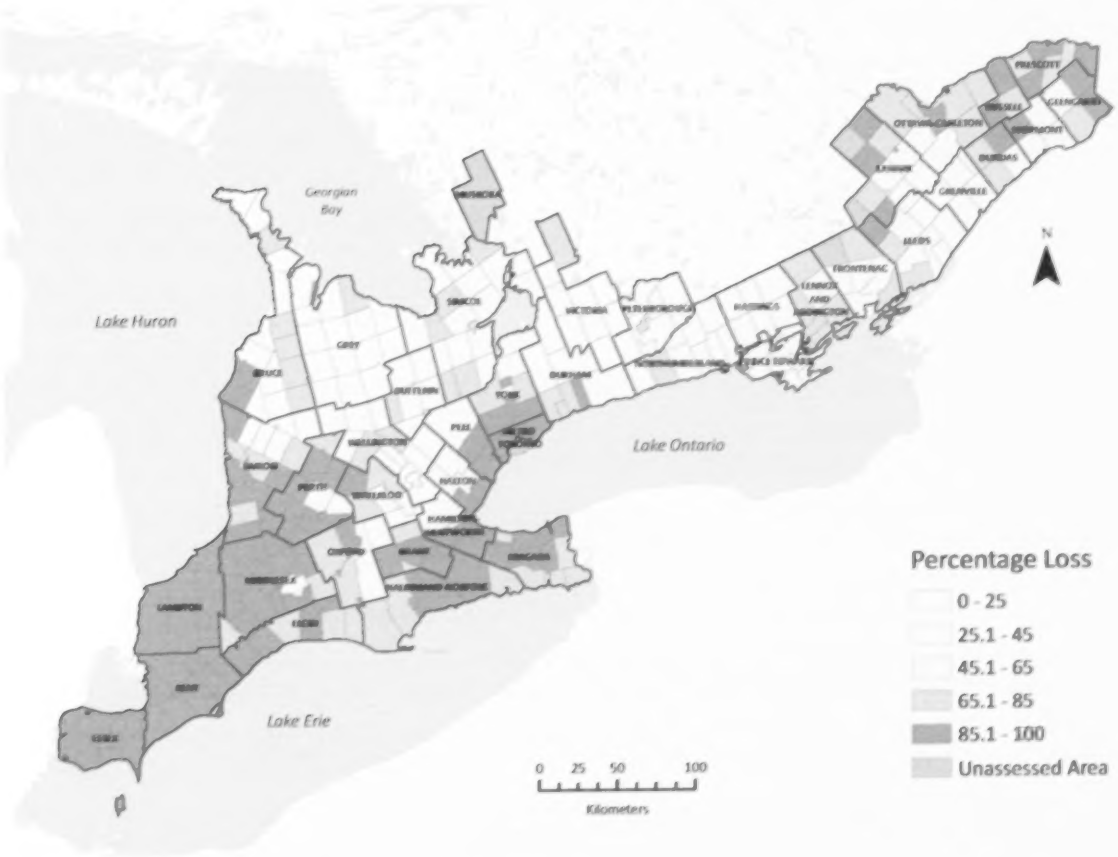


Figure 2: Loss of original wetland area by township, c.1800 – 2002.

Map courtesy of Ducks Unlimited Canada

Lincoln Sparrow nest. Rob Tervo

Exploring New Ways to Identify, Map and Evaluate Wetlands

The OMNRs' Ontario Wetland Evaluation System (OWES) provides guidelines for evaluating the significance of wetlands with respect to land use planning. Provincially significant wetlands are afforded protection through the *Planning Act* in municipal land use plans and recognized by conservation authorities through the *Conservation Authorities Act*, and in other regional plans including the *Oak Ridges Moraine Conservation Plan*, the *Greenbelt Plan* and the *Lake Simcoe Protection Plan*.

Carleton University and OMNR are researching the relationship between wetland processes and information obtained from remotely-sensed imagery and other existing geospatial data. Wetland ecological processes – nutrient cycling, hydrologic functioning and succession – operate at multiple spatial, temporal and organizational scales. The research will determine the strongest indicators of key ecological processes or attributes in the OWES.

Monitoring Coastal Wetlands in Durham Region

The Durham Region Coastal Wetland Monitoring Project (DRCWMP), being led by EC and the Central Lake Ontario Conservation Authority (CLOCA), is a long-term program for monitoring the physical and biological conditions of 18 wetlands in Durham Region along the north shore of Lake Ontario. With over eight-years of data, study results indicate the health of many of these wetlands is deteriorating. The conditions of biological communities such as aquatic vegetation, birds, amphibians and fish are declining overall, as are water and sediment quality.

Mapping of land cover in the watershed and wetland-adjacent land use suggests linkages between increasing urbanization and these downward trends. Other human-induced stressors such as water level regulation are also impacting wetland health and stability. These findings are guiding wetland restoration efforts, and where restoration efforts have already been initiated, conditions appear to be improving. Water quality at the Rouge River Marsh, Duffins Creek Marsh, Corbett Creek Marsh, and Bowmanville Marsh has improved, as has the aquatic vegetation community at both the Rouge River Marsh and Duffins Creek Marsh.

Part of the success of the DRCWMP comes from its transferable framework. The expansion of a standardized and consistent monitoring framework into other regions along the Lake Ontario shoreline demonstrates the value of strong local partnerships between Environment Canada, local conservation authorities, Bird Studies Canada and volunteers.

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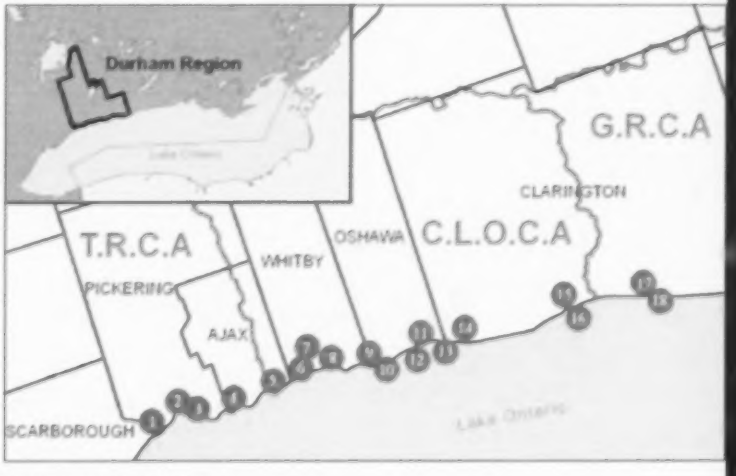


Durham report sites © CWS

The work achieved by local partnerships has made significant progress and suggests that a nationally coordinated effort would make regional monitoring of Great Lakes coastal wetlands even more efficient and cost-effective across the entire basin; creating consistency in data collection between agencies and over years, and facilitate information sharing at varying scales.

For more information please visit the CLOCA website: *www.cloca.com/lwc/monitoring_coastal.php*.

Assessing Wetlands using Aerial Photography

In 2009, the Digital Raster Acquisition Project – East (DRAPE) was completed. The DRAPE is just one of a series of orthophotography projects being led by the OMNR, each with the intention of acquiring current imagery snapshots of their respected study areas every five years. The DRAPE and the 2006 Southwestern Ontario Orthophotography Project (SWOOP) provide accurate, high resolution and seamless digital mosaic of imagery for most of southern Ontario. SWOOP imagery was updated in 2010 (*www.swoop2010.ca*).

These imagery products are an excellent tool to support wetland assessment, monitoring and conservation initiatives. They can be used to classify wetland types, to identify vegetation communities and surrounding land uses remotely, and they allow large and inaccessible areas to be covered efficiently and without disturbance. Further, with the renewal cycle of these products at five-year intervals, temporal trends in wetland extent and quality, along with surrounding land use changes, can be quickly and accurately assessed. Long term monitoring is simplified with orthophotography products that are spatially explicit and precise, allowing wetlands to be monitored frequently at high resolution.

For more information please contact the OMNR at: *lio@ontario.ca*.

Bullfrog © CWS

WETLANDS: FUNCTIONS versus VALUES

FUNCTIONS are the biological, chemical and physical processes that occur naturally within a wetland. They are fundamental to wetland integrity. Functions include:

- The cycle and storage of sediment, contaminants and nutrients *(e.g., nitrogen, phosphorus, carbon)*
- Groundwater recharge and maintenance of stream baseflow
- Biological productivity and diversity

VALUES reflect the *worth* or *importance* of wetland functions to humans and society. Values include:

- Enhanced water quality and quantity
- Protection of lake shores and stream banks from erosion
- Storage of flood waters
- Recreational opportunities (e.g., bird watching, nature study photography, hunting, fishing)
- Economic production (e.g., cranberries, wild rice, trapping)

Aerial view of a fen. Wasyl D. Bakowsky

Wetland Functions: Making Sound Assessments

Understanding wetland function is integral to their protection, restoration and enhancement. In a recent review, Hanson et al. (2008) explored the challenges associated with wetland functions assessment (WFA) and how best to address them.

One of the greatest challenges identified for WFA was the confusion between wetland functions and wetland values (for more on functions versus values, see see page 13). The review also showed that many previously developed WFA methods are complicated and often not effective at capturing the quantitative and qualitative information necessary to draw sound conclusions. These challenges demonstrate the need for standardized methods for assessing wetland functions.

The review specifically recommends that Great Lakes coastal wetlands be assessed using the approach developed for the regional coastal wetland monitoring project on Lake Ontario (for more on the DRCWMP, see page 12). This method originated from the Great Lakes Coastal Wetland Consortium (GLCWC) framework for rapid assessment techniques which report on the physical and biological attributes of Great Lakes coastal wetlands (for more on GLCWC, see page 15).

Ongoing field testing in Canada and the U.S. will shed light on selecting and developing the most suitable WFA methods.

For more information on wetland functions assessments, please visit: *www.ec.gc.ca/Publications/B8737F25-B456-40ED-97E8-DF73C70236A4/CWSwetlandAssessmentTechReport2008.pdf*

Tracking Wetland Waters: A Hydrogeological Study in the Minesing Wetlands

Designated as a wetland of international significance and spanning an area of over 6,000 hectares, the Minesing Wetlands is home to a diverse combination of wetland habitats including large areas of fen. Fens are characterized by a high water table with slow internal drainage by seepage down low gradients. Fens are sensitive to land use around the wetland because they rely on groundwater inputs.

In 2009, the Nottawasaga Valley Conservation Authority (NVCA), with support from the Ontario Eastern Habitat Joint Venture (OEHJV) and the NCC, completed a hydrogeological study of these fens in order to identify the source of their groundwater. This study identified that

Minesing Wetlands, Heron Rookery. Ethan Meleg

recharge on the Oro Moraine in the vicinity of Snow Valley Uplands is associated with the seepage found in the fens. Maintaining the natural hydrogeological regime will be one of the most important conservation actions required to protect the fen complexes.

Changes to groundwater flows and climate change could impact the integrity of these wetland communities. Management recommendations include:

- recognizing recharge areas in planning documents
- supporting the use of stormwater management that promotes infiltration
- establishing a long-term monitoring program
- extending local stewardship programs into areas of critical recharge and working with area municipalities to create public signage indicating recharge areas; this will create public recognition of the link between recharge areas and the Minesing Wetlands.

For more information on the Minesing Wetlands visit: *www.natureconservancy.ca/minesing*

Working Together to Monitor Wetlands: The Great Lakes Coastal Wetlands Consortium

Making informed management decisions with respect to the Great Lakes Basin requires basin-wide data on the ecological health of Great Lakes coastal wetlands. The formation of the GLCWC was the first step in addressing this need, with the goal to improve wetland monitoring and reporting for Canada and the United States under the GLWQA. Comprised of scientific and policy experts from all levels of government as well as environmental non-government organizations and other interests groups from both Canada and the U.S., the GLCWC has developed a practical long-term monitoring program for Great Lakes coastal wetlands.

The *Great Lakes Coastal Wetlands Monitoring Plan*, completed in 2008, presents a scientifically validated methodology for collecting biotic data on birds, fish, amphibians, macroinvertebrates and vegetation. The plan also incorporates landscape-based indicators such as land-use and cover measurements, as well as physical and chemical measurements. The sampling design recommends annual monitoring to establish status and trends of ecological health at different scales – site, region, and basin-wide.

By standardizing procedures, multiple agencies will be able to share data and monitor the status and trends for the entire basin, or by lake, thereby strengthening monitoring across the entire basin. Implementation of the *Plan* is underway in the Great Lakes and is funded by the U.S. Environmental Protection Agency (US EPA).

The *Plan* can be downloaded from the GLCWC website at: *glc.org/wetlands/final-report.html.*

A Business Case for Wetland Conservation – The Black River Sub-watershed

In the report *Lake Simcoe Basin's Natural Capital: The Value of the Watershed's Ecosystem Services* for the Lake Simcoe Region Conservation Authority, wetlands are a valued form of natural capital, providing an estimated $435 million in ecological goods and services each year. In other provinces, research has shown the magnitude of impact that wetland loss has on water quality. Where the economic impact of wetland loss is effectively communicated to government and the public, it proves to be an important driver for sustainable land use and wetland restoration.

In 2009, DUC and partners completed an assessment of sub-watersheds in southern Ontario and identified the Black River sub-watershed as an appropriate site for a wetland ecological goods and services valuation project. Collaborating with the University of Guelph and watershed partners, DUC conducted scientific research to establish the environmental and economic values of wetlands at a watershed scale. The University of Guelph supported DUC with technical expertise and cutting-edge hydrologic modeling.

MNR-2007 Canada-Ontario Agreement

Project results will be linked to the water quality objectives at the watershed level and will help drive government and public support for wetland protection, stewardship and restoration, resulting in water quality improvements in the Lake Simcoe watershed.

For more on this research, see: *www.ducks.ca/aboutduc/news/archives/prov2011/pdf/duc_blackriver_case.pdf.*

STRATEGY 3

Secure Wetlands and Encourage Stewardship

Regina Varrin

Milestone		Percent Complete by 2010 ("+" indicates 'ongoing')
3.1	Secure 6 000 hectares of wetlands using fee-simple purchase, land donations and/or conservation easements.	100% +
3.2	Promote and facilitate responsible wetland protection and management (Strategy 4) on private lands by landowners through extension and stewardship programs.	50% +
3.3	Establish a framework for determining basin-wide priority areas for securement and conservation that considers the broader landscape context (e.g., importance of habitat connectivity, watershed context, adjacent lands, natural heritage systems, protected area networks).	50%
3.4	Encourage uptake of grants, loans and other financial incentives to improve wetland protection (e.g., Conservation Land Tax Incentive Program, Managed Forest Tax Incentive Program, Agricultural Policy Framework, EcoGifts).	50%
3.5	Establish management/conservation plans on secured wetlands.	50%

Secure important wetlands using the most effective techniques. Undertake extension and stewardship activities with private landowners to protect the area and function of existing Great Lakes Basin wetlands and achieve the "no loss" long term goals.

Wetland protection is everyone's responsibility. Landowners play a critical role in protecting wetlands now and into the future by being conscientious land stewards.

THE ECOLOGICAL GIFTS PROGRAM

The Ecological Gifts Program (Ecogifts) can provide significant tax benefits to landowners who count rural or wilderness lands among their assets, and who wish to protect family lands and leave a natural legacy for future generations. Protecting nature on such properties, through partial or full donations of land or of conservation agreements can result in large charitable donation receipts and special tax benefits. In many scenarios, the landowner can continue to hold title and/or live on the land.

Black Tern, Oshawa, Ontario © Denby Sadler, CLOCA

For more information contact EC's Ecogifts Program Coordinator at: *pde-egp@ec.gc.ca*. To learn more you can also visit: *www.ec.gc.ca/pde-egp*.

CONSERVATION LAND TAX INCENTIVE PROGRAM

In 2005, the Community Conservation Lands (CCL) category was introduced under the Ontario government's Conservation Land Tax Incentive Program (CLTIP). Under this category, lands owned by registered charitable conservation organizations or conservation authorities are eligible for property tax relief under the CLTIP. CLTIP also provides a property tax exemption to participating landowners of provincially significant wetlands.

More information is available on the CLTIP website at: *Ontario.ca/CLTIP*.

Cinnamon Fern, Sam Brinker

Giving a Lasting Gift

When Lou and Judy Probst first visited the Carden Plain looking for land to buy and protect, wetland conservation was but a small part of their motivation. What they did understand, in part through their world travels, was what conservation can do, and they wanted to protect their own piece of Canada for themselves and for others.

"We were attracted to Carden because of the diversity of habitat," recalls Lou. "There were woodlands, wetlands, meadows, and we knew that the variety in habitat would mean a variety of species."

Judy was a born naturalist. With parents who were avid bird watchers, it was only natural for her to have an innate interest in wildlife. Lou's winning of the prestigious W.W.H. Gunn Conservation Award from Ontario Nature in 2008 speaks to his own dedication to conservation, especially through his involvement in many of Carden's community-based initiatives.

Lou and Judy had always planned to donate their land to the Nature Conservancy of Canada, and it was officially placed under conservation ownership in 2008 through Ecogifts. The 198 hectare (489 acre) McGee Creek and Cranberry Wetlands property protects habitat for at-risk wetland species such as Blanding's Turtle, as well as important common species including frogs.

All species, wildlife and human, benefit from generous gifts of land like the one made by Lou and Judy. Ecogifts like theirs contribute to critical wetland conservation efforts. "To protect species you need lots of space, connected space," observes Lou. Thanks to the Probsts, wetland species across Carden have even more.

Protecting Locally Significant Headwater Wetlands – Enniskillen Valley

Enniskillen Conservation Area is a 580 hectare public greenspace legacy project that was created by the Central Lake Ontario Conservation Authority in partnership with landowners. This Environmentally Sensitive Area is part of the Oak Ridges Moraine Conservation PlanNatural Linkage and Countryside Area. The area provides significant groundwater resources, open meadows, mature forests and wetland features in the steeply sloped headwaters of Clarington's Bowmanville Creek. It is a major migratory corridor for wildlife, with a thriving cold water fishery that is interwoven with a vibrant rural community.

Since 2005, more than 500 hectares of land, including over 60 hectares of headwater wetlands, were added to the Conservation Area. These fee-simple acquisitions were made possible with financial support from the Ontario Ministry of Natural Resources, Oak Ridges Moraine Foundation, Ontario Heritage Trust, the Ontario Ministry of Natural Resources, the Nature Conservancy of Canada (Greenlands Program), Regional Municipality of Durham, and the Central Lake Ontario Conservation Fund.

The fee simple purchase method of protecting land meets landowner needs while ensuring long term protection and enhancement of public greenspace for future generations. The support of private landowners who sell their properties to conservation agencies means that significant lands, including wetlands, are protected in perpetuity.

Species at Risk Farm Incentive Program

Farmers across Ontario may be eligible for funding support under the Species at Risk Farm Incentive Program (SARFIP). This partnership was developed by federal and provincial governments as well as farm organizations. This cost-share program is aimed at farmers who take action on selected environmental Best Management Practices (BMPs) that play a key role in contributing to a healthy and diverse environment as well as helping sustain production and profitability on the farm.

For more information visit:
www.ontariosoilcrop.org/en/programs/species_at_risk.htm

Municipal Investment in Protecting Wetlands

A favourite destination for many Whitby residents, Heber Down Conservation Area is a significant natural heritage area that protects over 80 percent of the provincially significant Heber Down Wetland Complex. A key parcel of land (25 hectares) containing a number of wetland pockets associated with the provincially significant wetland was acquired by the Central Lake Ontario Conservation Authority in 2007. Thanks to funding support from the Town of Whitby and the Region of Durham, this newly acquired parcel fills a gap within the existing boundary of Heber Down Conservation Area. Natural heritage focused management within this tract of land will ensure that provincially significant wetland cells and the groundwater features that maintain them will not be disturbed by future land use changes.

Snapping Turtle. Sam Brinker

Watershed Approach to Land Securement – Lake Simcoe Region Conservation Authority

Lou Wise

In 2005, after a funding restricted land acquisition hiatus, the Lake Simcoe Region Conservation Authority (LSRCA) resumed conservation land securement; it had not acquired any new land since the mid 1990s. At this time, the LSRCA prepared the Natural Heritage System Land Securement Project 2006-2010 (NHSLSP) for the Lake Simcoe watershed. The NHSLSP report provides background on land securement methods (fee simple, donation, conservation agreement etc.) and sets out the criteria for the identification of target land securement areas. The analysis by LSRCA's GIS department identified eight target areas based on overlay mapping of provincially significant wetlands (PSWs), environmentally significant areas (ESAs), areas of natural and scientific interest (ANSIs), and watercourse features.

The Beaver River Wetland Conservation Area was identified as one of the NHSLSP's target land securement areas. It contains PSW, ESA and ANSI lands and supports important species including Least Bittern, Black Tern, Canada Warbler, Snapping Turtle, and Black Walnut. The Beaver River Wetland also contains almost all of the 80 bird species found within the LSRCA's watershed.

Fifteen properties totalling 342 hectares have since been secured – almost entirely PSW. Funding for these acquisitions was partially provided by a bequest of $300,000 from the estate of Katharine Symons (administered by the Nature Conservancy of Canada). Further financial support was provided by Ducks Unlimited Canada, the Regional Municipality of Durham, the Greenland's Program – an Ontario Ministry of Natural Resources – Nature Conservancy of Canada initiative, the Ontario Heritage Trust's Natural Spaces Land Acquisition and Stewardship Program, and the Lake Simcoe Conservation Foundation.

For more information please visit: *www.lsrca.on.ca.*

Wetland Securement Sites in Ontario

From January 2005 to December 2010, 14,182 hectares of wetland and wetland associated habitat was secured in 174 properties in Ontario.

Figure 3: Wetland and wetland associated habitat secured in Ontario by non-government and government partners from January 2005 to December 2010. Land was secured primarily by non-governmental organizations (land trusts and conservation authorities) using funding from private individuals, municipal governments, the Canadian government, the Ontario government and the U.S. Fish and Wildlife Service under the following programs: Ontario Eastern Habitat Joint Venture / North American Waterfowl Management Plan, Natural Areas Conservation Program, Greenlands Program, OMNR Land Securement Program, Ontario Land Trust Assistance Program, Ecogifts, Niagara Escarpment Ecological Land Acquisition Program, Natural Spaces Land Acquisition and Stewardship Program, Ontario Parks Legacy Program, and MNR's COA program.

Wetland Care

Between 2008 and 2010, the Ontario Wetland Care (OWC) program enabled partnerships that built capacity for wetland conservation in Ontario. The wetland restoration and retention program was funded by DUC and the OMNR and replaced an earlier *Healthy Wetlands... Healthy Communities* partnership. OWC projects were implemented by landowners, stewardship councils, conservation authorities and other partners, with technical and funding assistance from DUC and OMNR.

The partnership aimed to promote understanding and stewardship of wetlands by providing southern Ontario landowners technical advice and funding for restoration projects. OWC brought together 21 partners to promote wetland conservation through workshops, demonstration sites, educational materials and personal site visits with knowledgeable conservation staff. Staff worked with landowners to prepare customized stewardship plans for their properties. Overall, this three-year OWC program secured 9682 hectares of wetlands in Ontario.

RESULTS OF THE 2-YEAR PROGRAM

175 Projects completed or underway
8,792 Hectares under DUC conservation agreements:
- 5,036 Private land
- 3,756 Public land

874 Hectares under voluntary stewardship agreements
9,666 Total hectares (stewardship and conservation agreements)

Minesing Wetlands Management Plan

The Minesing Wetlands Natural Area is a 6,070 hectare complex of treed swamp, marsh, fen and floodplain forest located along the Nottawasaga and Mad Rivers west of Barrie. It is one of southern Ontario's most significant wetland systems. It is the third largest wetland in the southern portion of the province, surpassed only by Greenock Swamp in Bruce County, and the Long Point marshes along Lake Erie. The Minesing Wetlands Natural Area has been recognized as a PSW, ANSI, and an area of global significance through designation as a Ramsar Site.

Over three decades, the NCC has partnered with the OEHJV members* and the NVCA, to secure and steward over 60 percent of the Natural Area, creating the fifth largest protected area in southern Ontario.

In 2009, NCC and NVCA completed a five-year management plan to support the conservation of protected areas within the wetland. This plan built on the detailed biological inventories conducted in 2007 that identified many rare species, including the first Canadian record of the Hine's Emerald, a globally rare dragonfly. The management plan identified seven biodiversity targets, including open fens, marshes and rare reptiles. Planned management actions that will support wetland conservation include, increased monitoring for invasive plants, greater public awareness on the importance of Minesing Wetlands, and increased local conservation capacity.

* OEHJV members include EC-CWS, OMNR, DUC, NCC, Agriculture and Agri-Food Canada, and Wildlife Habitat Canada (WHC).

STRATEGY 4

Create, Enhance, Rehabilitate, Restore and Manage Wetlands

Blue-spotted Salamander © Denby Sadler

Milestone		Percent Complete by 2010 ("+" indicates 'ongoing')
4.1	Create, enhance, rehabilitate and restore 6,000 hectares of wetlands.	100% +
4.2	Continue to provide annual training opportunities via the Temperate Wetlands Restoration Training Course (Level 1), including development of a course in eastern Ontario. Where possible, develop Level II Temperate Wetland Restoration Training initiatives across southern Ontario to provide hands-on training opportunities.	75% +
4.3	Continue to evaluate and adapt wetland management practises to ensure the long-term function of individual wetlands is retained.	75% +

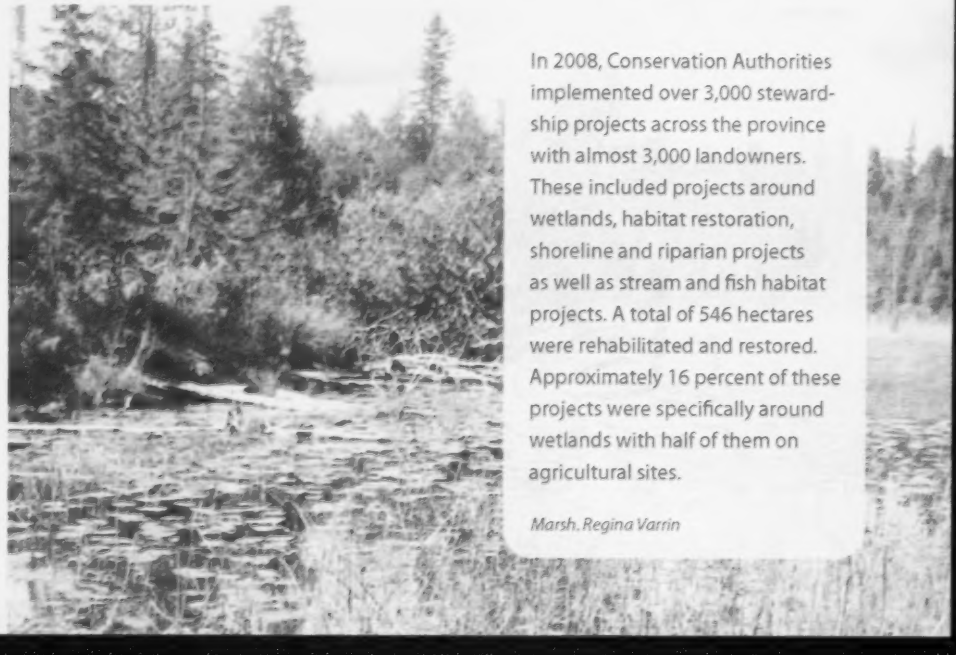
Undertake rehabilitation projects at priority sites. Pursue opportunities for wetland rehabilitation through existing programs, including Remedial Action Plans and the Ontario Eastern Habitat Joint Venture (OEHJV). In the long-term, consider ecological and watershed-based goals to achieve an overall increase in the area and function of wetlands in the Great Lakes Basin.

Wetland Enhancement

Between 2006 and 2010, partners with OEHJV completed 298 wetland restoration and enhancement projects in Ontario, resulting in the improvement of 9,505 hectares of wetland within the Great Lakes Basin. These projects were led by Ducks Unlimited Canada, often implemented in partnership with Conservation Authorities, Stewardship Councils, OMNR and private landowners. Funding for these projects was provided by the U.S. Fish and Wildlife Service (under the North American Waterfowl Management Plan), the Ontario Ministry of Natural Resources, Environment Canada's Canadian Wildlife Service (Ontario Region), the Nature Conservancy of Canada, Wildlife Habitat Canada, and other private organizations and individuals. These projects help to enhance migratory bird habitat, contributing to continental ojectives under the North American Waterfowl Management Plan.

Several other wetland enhancement initiatives were also undertaken, led by other GLWCAP partners; however, extensive summary data is not available to enable accurate reporting outside of the OEHJV.

Historic wetland conversion has led to a loss of critical wetlands and connectivity across the Great Lakes Basin. Recognizing the importance of wetland functions in the context of larger ecosystems, restoration, rehabilitation and maintenance of wetlands has become a key focus of conservation efforts.



In 2008, Conservation Authorities implemented over 3,000 stewardship projects across the province with almost 3,000 landowners. These included projects around wetlands, habitat restoration, shoreline and riparian projects as well as stream and fish habitat projects. A total of 546 hectares were rehabilitated and restored. Approximately 16 percent of these projects were specifically around wetlands with half of them on agricultural sites.

Marsh, Regina Varrin

Wetland Restoration Initiatives (2005 to 2009) – A Focus on Headwaters

Headwater wetlands are very important to base flow, health of river systems, watersheds, water benefits and biodiversity. Headwater wetlands contribute to ecological processes and the overall ecological health and well being of watersheds. The original wetlands and first order streams were small and widely scattered and covered the land in a "web-like" connected network.

Restoration in the upper portions of watersheds has a great potential to improve fish habitat, increase base flow, improve water quality, reduce water temperature and decrease sedimentation. The diversity of projects can be seen through the examples included here:

1. **Rural Lambton Stewardship (RLS)**
   The RLS network developed a Healthy Waterways Initiative to address water quantity, water quality and biodiversity issues resulting from over-drainage in their community. Since 2005, 30 projects have been completed enhancing more than 34 hectares of wetland.

2. **Rondeau Bay Watershed Wetland Initiative**
   The goal of this multi-partner initiative is to reduce sediment nutrient loading to Rondeau Bay by restoring and creating wetlands in sub-watersheds of the intensively farmed Rondeau Bay Watershed. So far the initiative has seen the creation and restoration of 10 treatment wetlands totalling 6.1 hectares, with another 13 wetland projects planned.

3. **Ausable Bayfield Wetland Restoration Initiative**
   The Ausable Bayfield Conservation Authority, along with partners, initiated a Healthy Headwaters Wetlands Initiative in 2008 in the intensively farmed area along the eastern shore of Lake Huron. Fourteen sites totalling 52.6 hectares have been restored, with other potential sites currently being assessed.

4. **Niagara Peninsula Conservation Authority (NPCA)**
   The NPCA is actively restoring wetlands in 8 sub-watersheds in partnership with Ducks Unlimited Canada and several other partners. Between 2006 and 2009, 32 hectares were restored. Planning of future wetland restoration projects is ongoing.

5. **Credit Valley Conservation (CVC) Authority Wetland Strategy**
   In 2009, CVC developed a wetland restoration strategy for its 23 sub-watersheds that identifies priority areas for wetland restoration and rehabilitation, and priority wetlands for climate change adaptation measures. The report also provides recommendations for setting wetland targets, strategy monitoring, project design guidelines, climate change adaptation, refinements to GIS analyses, and more detailed site selection.

6. **Toronto and Region Conservation Authority (TRCA)**
   Between 2005 and 2009, the Restoration Services Section of TRCA restored or created 75 hectares of wetland at 63 sites throughout its watersheds. This included the creation of an 8.2 hectare coastal wetland at Tommy Thompson Park, the largest wetland gain on the Toronto waterfront and made possible through funding from Waterfront Toronto, which included federal and provincial support. Since its creation, on site enhancements include the addition of sunken logs for fish habitat, islands for tern nesting, turtle basking areas, and aquatic and terrestrial plantings. Wildlife has responded remarkably to the new habitat and a variety of species have been documented. Monitoring at the wetland complex focuses on water quality, as well as the health of all fish, wildlife and plant communities.

Blue Heron © Denby Sadler

Sora feeding in still water. Dave Menke / US Fish & Wildlife Service

Ontario Stewardship: Engaging Communities

It has been almost 15 years since the inception of Ontario Stewardship (a program of the OMNR), and while it continues to evolve and grow, the foundation of its success remains with its volunteers, local communities, and partners.

The program uses a community-based approach to encourage stewardship as a lifestyle or as a philosophy for land management; inspiring people to make a difference at a community level. Through local councils, the program brings together landowners, associations, resource agencies and individuals who share a vision of responsible land care and the sustainable use of resources. Participants work together using an ecosystem-based approach to improve local resource stewardship.

Presently, the Ontario Stewardship network consists of 46 stewardship councils located throughout the province, including six new Ontario Stewardship community councils from northern Ontario. Approximately 15,000 volunteers take part in more than 500 projects every year, many of which include wetland restoration initiatives.

Ontario Stewardship promotes the sustainable use of our natural resources for future generations. Ontario Stewardship and its community councils welcome new partners, ideas and volunteers. Get involved by contacting your local stewardship council or visit our website at: *www.ontariostewardship.org*.

ONTARIO STEWARDSHIP PROGRAM PROJECT HIGHLIGHTS

1. **Bento Wetland Restoration**

   The Bento Wetland Restoration project in Elgin Township, initiated in 2007, involves the large scale restoration of 48.6 hectares of marginal farm land into a mosaic of wetland, forest and tallgrass prairie habitat. Fall 2009 marked the completion of Phase One – the restoration of 2.4 hectares of wetland habitat. Partners in the Bento Wetland Restoration project include Ducks Unlimited Canada, Environment Canada's EcoAction, Trees Ontario Foundation, and the Elgin Stewardship Council, Ministry of Natural Resources.

2. **Haliburton Hatchery Constructed Wetland Project – Haliburton County**

   The conservation community in Haliburton and the Haliburton Highlands Stewardship Council joined forces to develop, install and monitor a constructed wetland to treat aquaculture effluent at the Haliburton Fish Hatchery. The hatchery transitioned wastewater treatment from traditional settling ponds to a constructed wetland, where the water is treated to a higher environmental standard.

   In addition to clean water, the project also provides learning opportunities for students and demonstrates the importance of naturally functioning wetlands as well as the potential of constructed wetlands as an innovative alternative to traditional wastewater treatment.

   Additional partners and supporters of this project include Haliburton Highlands Secondary School, Trent University, County of Haliburton, Municipality of Dysart et al., Environment Haliburton!, the Ontario Ministry of Natural Resources, Haliburton-Kawartha-Pine Ridge Health Unit, Centre for Alternative Wastewater Treatment, U-Links Community Based Education, Federation of Ontario Cottagers' Associations, and Haliburton County Development Corporation.

Aylmer Wetland Drain Project

Recognizing the need to restore headwater wetlands that have been drained, the Aylmer District of the OMNR developed the Aylmer Wetland Drain Project. The project helps landowners, with support from their local stewardship councils and partner networks, increase water storage, restore habitat and enhance biodiversity of ditched and drained wetlands.

Using the skills and procedures taught in the wetland restoration training course, projects are implemented at key sites, identified for their overall beneficial impact within their respective watershed. Watersheds that have had significant loss of wetlands are the primary target sites for drainage projects.

From its beginnings in Norfolk County, the initiative has grown and is supported by landowners, municipal engineers and drainage superintendents across southwestern Ontario. Through partnerships with landowners, municipalities and conservation organizations, the project has returned more than 1,321 hectares of southwestern Ontario's wetlands to their natural state.

Turkey Point marsh. Rebecca Zeran

Water Management and Wetland Restoration Training

In 2009, the wetland restoration training course was updated and expanded to include more information on water management. Held annually, this OMNR course involves both classroom work and extensive field days. Traveling from the top of watersheds down the systems, participants examine drained and degraded wetlands, intact wetlands, wetland complexes and riparian systems – all within a watershed context. Site visits include visits with drainage superintendents, landowners and biologists. In the field, participants are presented with hypothetical restoration scenarios to work through and report on. Over the years, participants have evaluated the course very highly, with more than 110 resource professionals enrolling between 2005 and 2009.

Between 2005 and 2008, 17 participants from the introductory, week-long wetland restoration training course completed a thorough assessment of potential restoration sites at two headwater study areas on the Oak Ridges Moraine. Under the direction of instructors, participants undertook five tasks: data synthesis of 21 variables, a review of ecological history, characterization of socio-political issues, a data review, and synthesis of results. More than 930 potential restoration sites were identified in the Upper Humber Watershed and adjacent areas, and in the Upper Duffins Creek Watershed and adjacent areas. Participating agencies are currently planning selected wetland restoration projects.

For more information on these courses visit: *www.wmwrc.ca.*

White water lily; taken at Wye Marsh NWA
© Her Majesty the Queen in Right of Canada;
Ian Parsons

STRATEGY 5

Strengthen Legislation, Policies, Agreements and Compliance

Green-winged Teal. Simon Dodsworth

Milestone		Percent Complete by 2010 ("+" indicates 'ongoing')
5.1	Conduct research studies, gap analyses and develop performance measures to evaluate effectiveness of provincial policies (e.g. Provincial Policy Statement, Niagara Escarpment Plan) to protect wetlands and recommend any changes and resources required to improve effectiveness of the policy.	50%
5.2	Review and comment on legislative/policy reviews affecting wetlands to increase protection of all wetlands and strengthen impact assessment rigour; GLWCAP coordination of comments where possible.	50% +
5.3	Encourage explicit identification of GLWCAP priorities within the next Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem.	50%
5.4	Develop guidance documents to aid in conducting and/or reviewing environmental impact studies and functional assessments in support the *Conservation Authorities Act and the Planning Act*.	25%
5.5	Encourage the protection of all wetlands, including locally significant and unevaluated wetlands.	50% +
5.6	Support the wetland evaluation process, which identifies wetlands for protection under the *Planning Act* (see milestones 2.2 and 6.1).	50% +
5.7	Conduct a review on the effectiveness of existing policy and assessment processes as to their protection of wetlands, with particular focus on infrastructure (as defined in the PPS 2005) projects.	25%

Refine and improve compliance with existing regulatory programs. Strengthen wetland conservation and protection through ongoing and upcoming regulatory/agreement/ policy reviewer opportunities.

Wetland legislation and planning has been enhanced in recent years, but there remains room for improvement. Working with municipalities to build wetland policy into their Official Plans remains one of the most important and effective ways of protecting wetlands throughout the Great Lakes Basin.

Conservation Authorities Act Regulating Activities in and Adjacent to Wetlands

Under regulations of the *Conservation Authorities Act* approved by the Minister of Natural Resources in 2006, proposed activities and development are regulated by conservation authorities through a permitting process for purposes of public safety and natural hazard prevention and management. Under these "Development, Interference and Alteration Regulations', landowners require a permit from the conservation authority to undertake activities which may impact the control of flooding, erosion, pollution, dynamic beaches, or conservation of land in areas related to water-based hazards (e.g., floodplains, shorelines, hazardous lands), including areas around wetlands where proposed development could interfere with the hydrologic function of the wetland. A permit from the conservation authority is also required to undertake activities that change or interfere with a watercourse or a wetland.

As part of the permit application, a conservation authority may request an Environmental Impact Study (EIS). Traditionally, an EIS is used to ensure that natural features will not be negatively impacted by development, and therefore to determine the suitability of a proposal. For the purposes of the *Conservation Authorities Act*, the hydrologic functions of wetlands would be important considerations in an EIS.

Protecting All Wetlands

Approximately 72 percent of the wetlands in Ontario south and east of the Canadian Shield have been filled or drained. We continue to lose wetlands to development, road construction and drainage. The small proportion of original wetlands that remain emphasizes the importance of protecting all remaining wetlands.

Protection of certain wetlands is provided indirectly through the 2005 Provincial Policy Statement (PPS) issued under the *Planning Act*. The PPS prohibits development and site alteration of PSWs in southern and central Ontario, and along the coast of the Great Lakes. In order for a wetland to be designated as provincially significant, it must be evaluated and identified by the OMNR; however, many wetlands remain unevaluated. Until evaluated, wetlands are unprotected and unregulated under the *Planning Act* except within the planning areas of several provincial plans or where a planning authority affords them protection.

Planning authorities can protect wetlands that have not been evaluated or designated provincially significant. The policies of the PPS represent minimum standards. They do not prevent planning authorities from going beyond those standards unless doing so would conflict with any policy of the PPS. Thus, planning authorities can opt to protect additional wetlands they deem to be important. These authorities can also place the burden of responsibility for identifying and evaluating any wetlands encountered on proposed development sites on the developers themselves.

In Ontario, the *Conservation Authorities Act* is the only wetland specific legislation with regulations in Ontario or Canada that involves regulating activities in all wetlands, where conservation authorities exist. In addition, there are a number of area-specific land use plans which contain protections for wetlands including the *Niagara Escarpment Plan*, *Oak Ridges Moraine Conservation Plan*, *Greenbelt Plan*, and the *Lake Simcoe Protection Plan*. This protection is mainly through the municipal planning process under the *Planning Act*.

Wetlands that have not been identified as provincially significant can also be protected through ownership by conservation organizations. For example, Ontario Nature currently protects over 2,200 hectares of natural habitat, including many unevaluated and undesignated wetlands. Similarly, conservation authorities currently own and protect more than 38,500 hectares of wetlands.

Contact your local municipality to find out how wetlands are being protected through your official plan.

Protecting Wetlands through Species at Risk Legislation

Wetlands are 'hotspots' for rare or endangered species and their protection is vital to the conservation and recovery of the multitude of species at risk that use them.

The Governments of Ontario and Canada demonstrate their shared commitment to wetland species and habitat protection with the provincial *Endangered Species Act* (ESA) and the federal *Species at Risk Act* (SARA). These acts support wetland conservation by providing for the protection of species at risk habitat. Conserving species-rich wetlands protects existing at-risk species and helps to prevent more species from being listed in the future.

Originally introduced in 1971 in response to declining populations of plants and animals, Ontario updated its ESA in 2007. Updates included a greater focus on habitat protection, a stronger commitment to species recovery, more effective enforcement, and greater accountability. The federal SARA (2002) also provides for the recovery of endangered or threatened species and their associated habitats, and encourages the management of other species and their associated habitats in order to prevent them from becoming at risk.

Together, ESA and SARA protect habitat for species at risk in and around wetlands.

For information of the ESA: *www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_07e06_e.htm.*
For more information on SARA: *laws-lois.justice.gc.ca/eng/acts/S-15.3.*

Spiny softshell © Ryan M. Bolton

Renewing the Great Lakes Water Quality Agreement

In June 2009, both Canada and U.S. committed to updating the GLWQA. First signed in 1972 and renewed in 1978, the GLWQA has not been revised since a 1987 amendment.

This agreement represents Canadian and U.S. commitments to restore and maintain the physical, chemical and biological integrity of the Great Lakes Basin ecosystem. Considerable progress towards this goal has been made with many notable achievements; however, advances in science and technology reveal that significant challenges still exist, and new issues are emerging such as:

- invasive non-native species
- land use practices
- population growth and urbanization
- new chemical pollutants
- climate change
- human health

New strategies and innovations are being identified to resolve these issues.

Both parties to the GLWQA – Canada and U.S. – recognize the paramount importance of wetlands in maintaining the physical, chemical and biological integrity of the waters of the Great Lakes Basin ecosystem. Initiatives such as the GLCWC and the Lake Ontario Biodiversity Conservation Strategy were created to address this matter.

The positive actions of both parties in the past signal a promising future for Great Lakes wetland conservation in the upcoming amendments to GLWQA.

Marsh. Regina Varrin

STRATEGY 6

Strengthen and Support Local Land Use Planning and Commitment to Wetland Conservation

Green Darner, Simon Dodsworth

Ensure that all new plans such as resource-management plans, watershed-management plans, local land use plans, Official Plans and habitat management plans incorporate wetland protection and rehabilitation strategies. Also encourage recognition and designation of appropriate adjacent and upstream land uses.

Providing training and decision-making tools to land use planners is an effective way to support local wetland conservation. By sharing expertise and ensuring that planners have up-to-date resources, wetland conservation can be more readily incorporated into local planning initiatives.

Milestone		Percent Complete by 2010 ("+" indicates 'ongoing')
6.1	Support and undertake wetland evaluations using the Ontario Wetland Evaluation System and provide the information to local planning authorities to support the Provincial Policy Statement; place priority on wetlands that are at risk or identified as priorities in other planning vehicles. Increase capacity for the evaluation of wetlands by OMNR, NGOs and others, the review and approval of evaluations by OMNR and, the incorporation of significant wetlands by local planning authorities in to Official Plans and (as appropriate) zoning by-laws.	50% +
6.2	Update the OMNR Natural Heritage Reference Manual, including information to support natural heritage policies related to coastal wetlands.	100%
6.3	Identify, promote and assist activities of conservation authorities and municipalities to maintain current watershed plans/strategies, integrated resource-management plans, zoning and other activities for wetlands protection and restoration.	50% +
6.4	Develop Biodiversity Conservation Strategies for all Great Lakes in Ontario; ensure that a focus on coastal wetlands conservation is incorporated into the Strategies and into future priority setting at local and provincial/federal scales.	50%
6.5	Encourage and support the adoption of wetland conservation policies by municipalities through the provision of information and/or advice during the review of land use planning documents (e.g., Official Plans, Environmental Impact Studies, applications), in accordance with GLWCAP member jurisdiction or mandates.	50% +
6.6	Encourage the protection and stewardship of all wetlands by planning authorities.	25% +

Giving Municipalities Reasons and Resources to Conserve Wetlands

Although DUC has been involved in land use planning since the 1990s, a dedicated municipal extension program was created in 2005 to communicate key messages on local wetland values to select municipalities and provide input and support to land use planning initiatives. One of the overarching goals of the program is to answer the question: "why is wetland conservation important to a municipality?"

The program was given a boost between 2007 and 2010 when DUC received funding from the OMNR COA program. During this time DUC delivered eight workshops to municipal representatives, including councillors, staff, and committee members. Municipalities starting or planning an official plan review were targeted. Workshop topics were chosen to reflect wetland

American White Pelican © Denby Sadler, CLOCA

values and issues most relevant to those municipalities, and included interpretive tours of local wetlands to further illustrate concepts covered in presentations. Information resources, such as the Natural Heritage Planning News newsletter, were also initiated to sustain communications outside of workshops and raise public awareness. In 2008, DUC produced the first issue of the newsletter which highlighted innovative municipal approaches to natural heritage conservation. Workshop participants have praised the workshops for providing credible, straightforward information on local wetland values and for the opportunity to discuss wetland issues with their peers, landowners, and conservation practitioners. The wetland tour component is especially popular.

Input to Local Official Plans

Saugeen Valley Conservation Authority (SVCA) recognizes a need to be flexible in approaches used in order to encourage updating Official Plans with protection for all wetlands incorporated into them.

In 2005 and 2006, as part of the Town of Saugeen Shores Local Official Plan update, the natural heritage policies needed to be updated for the area outside of the two urban centres on the Lake Huron coast. All natural heritage features, including wetlands, were considered. Although many wetlands are present in the area, only a few have been evaluated and only one was identified as provincially significant. Rather than spending time and money on a comprehensive natural heritage study or watershed plan, landowners, the municipality, the County Planning Department and the SVCA agreed on which areas to designate as "no development", and which to designate for future residential use. Approximately 80 percent of the subject area will be left in a natural state including hundreds of hectares of wetlands.

In 2008 and 2009, the Municipality of Kincardine completed a natural heritage study for its Official Plan. The Municipality is now working on an implementation plan which will result in an Official Plan amendment. If the implementation plan and Amendment are adopted by the Municipality, there will be increased protection for many natural heritage features, including wetlands and adjacent lands, as new development will be largely directed to existing settlement areas. The SVCA is providing technical advice throughout the process and reviewing associated maps.

Eastern Georgian Bay Coast Wetland Evaluations

Wetlands are an important part of the eastern Georgian Bay coast; they define its character. They are also a habitat at risk from incompatible shoreline and road development.

In 2008, Carling Township, its landowners, the NCC, Georgian Bay Land Trust (GBLT), and the OMNR initiated a pilot project to conduct wetland evaluations in the western portion of the Township. The four general study areas encompassing approximately 4,856 hectares include the north and west sides of Deep Bay, north and south of Snug Harbour Road, and the Shebeshekong Bay and West Bay area south to past Snug Harbour.

Marshes, swamps, fens, and the globally unique coastal wetlands of the eastern Georgian Bay coast were evaluated using the OWES. This is a standardized provincial method of evaluating wetlands to determine whether these natural features should be designated as 'provincially significant' and given protection status through provincial and local planning policy. The OMNR has the provincial mandate to provide the final review and approval of the wetland evaluations, and to determine whether they will be designated as provincially significant.

Some of the rare species and unique habitats found during the field surveys include, Eastern Massasauga – a provincially and federally threatened and protected species; Eastern Prairie Fringed-orchid – a provincially and federally rare plant; as well as habitat which is regionally significant fish spawning.

Eastern Massasauga. Rob Tervo

The project was made possible with funding support from the MNR COA, EC, Carling Township, and from private donations and in-kind contributions by individuals in partnership with GBLT and the NCC.

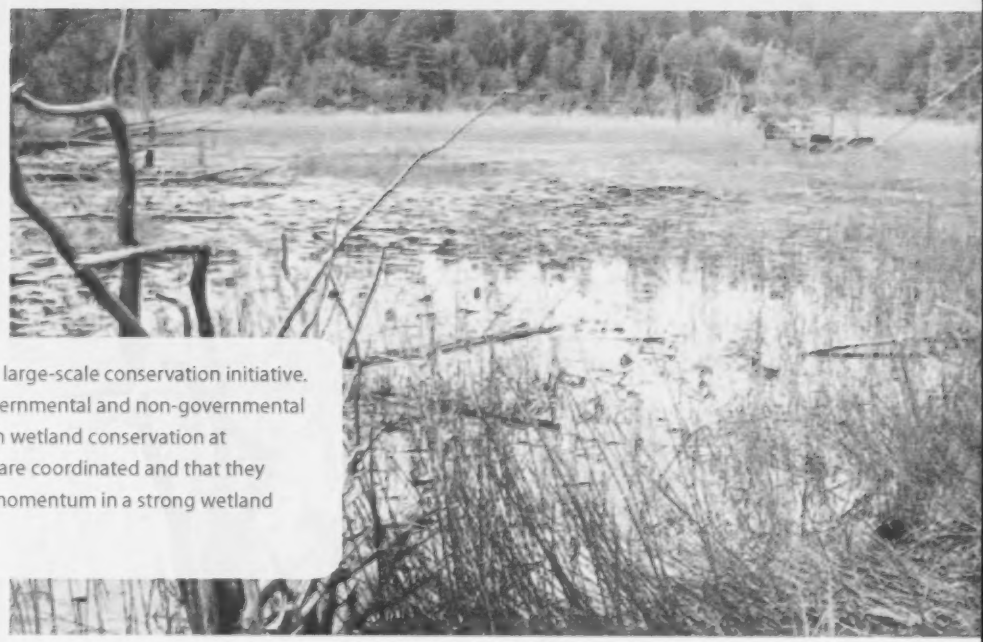
STRATEGY 7

Improve Coordination and Strengthen Partnerships

Poor Sedge. Regina Varrin

Milestone		Percent Complete by 2010 ("+" indicates 'ongoing')
7.1	Build and maintain alliances and partnerships with other conservation agencies/initiatives to ensure and improve coordination and efficiency.	75% +
7.2	Improve linkages of GLWCAP actions to binational Great Lakes wetlands activities such as Lakewide Management Plans, Great Lake Biodiversity Conservation Strategies, Remedial Action Plans and State of the Lake Ecosystem Conference (SOLEC).	75%
7.3	Improve linkages of GLWCAP actions to binational Great Lakes wetlands monitoring and research initiatives such as the International Joint Commission, the Great Lakes Commission and the Great Lakes Coastal Wetlands Consortium.	75%
7.4	Improve linkages and coordination of GLWCAP actions with habitat and species-based conservation initiatives such as the North American Bird Conservation Initiative and the Eastern Habitat Joint Venture.	75%
7.5	Encourage uptake of GLWCAP actions within established partner-based collaboratives such as the Stewardship Network of Ontario and Ontario's Biodiversity Council.	25%
7.6	Optimize implementation of GLWCAP through the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem.	75%
7.7	Plan an integrated wetland workshop to discuss the status of wetlands and identify future direction.	25%

Coordinate and integrate all the GLWCAP initiatives with other ongoing programs that affect Great Lakes wetlands, in particular activities associated with relevant international conventions and agreements.



Complementary initiatives are central to any large-scale conservation initiative. The Great Lakes Basin supports multiple governmental and non-governmental conservation agencies who are involved with wetland conservation at some level. It is critical to ensure that efforts are coordinated and that they support each other. The result is continued momentum in a strong wetland conservation movement.

Regina Varrin

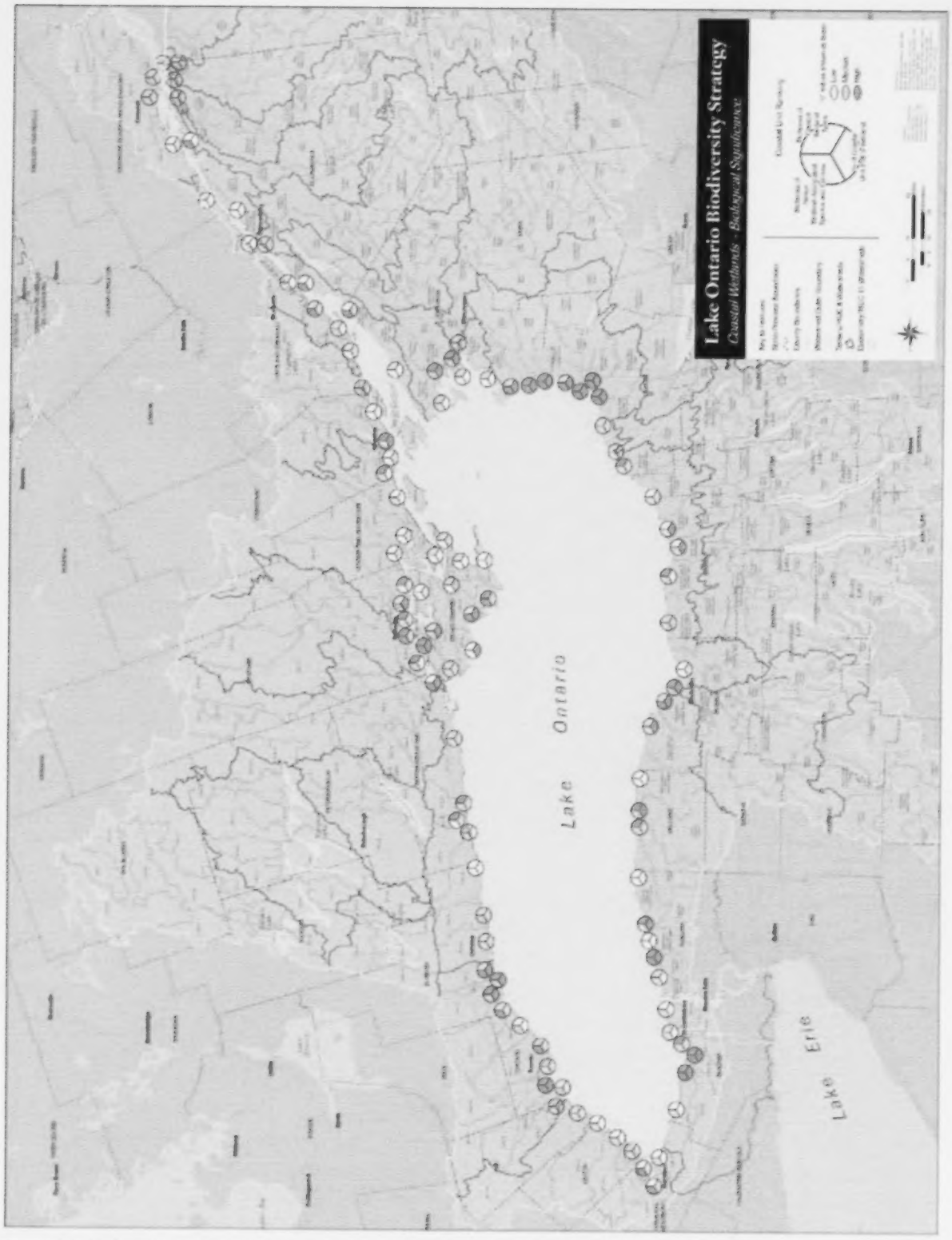


Figure 4: Lake Ontario Biodiversity Strategy

Lake Ontario Biodiversity Conservation Strategy

Lake Ontario is an ecosystem of international importance, providing important ecological services to more than 10 million people. Past and current neglect of this ecosystem has led to drastic changes in their ecosystems with serious consequences to native species, food webs and quality of life.

A Lake Ontario Biodiversity Conservation Strategy was completed in 2009 and presents the recommendations of a binational approach to protect and restore, to the fullest extent possible, the native biodiversity and critical natural processes of Lake Ontario (including the Upper St. Lawrence River). Experts from Canada and the U.S., representing over 50 agencies and organizations developed the strategy.

The strategy identifies key biodiversity targets including islands, migratory fishes, the nearshore zone, benthic and pelagic systems, and coastal wetlands (Figure 4). Some of the recommendations from this strategy include, securing 50 percent of unprotected and vulnerable coastal wetlands, tributary floodplains, and terrestrial systems in watershed conservation plans by 2015; increasing riparian and coastal natural cover by 2015, through the restoration of stream and coastal buffers and wetlands in order to reduce peak flows; and developing basin-wide monitoring of coastal wetlands and other nearshore habitats.

The Lake Ontario Biodiversity Conservation Strategy is being used by agencies to help direct project funding at key areas for wetland conservation and restoration along the Lake Ontario coast.

The full report is available at:
www.epa.gov/glnpo/lakeont/reports/lo_biodiversity.pdf.

Stewardship Network of Ontario

The Stewardship Network of Ontario (SNO) collaborates with a wide range of stewardship and conservation organizations at the community, regional and provincial level across Ontario in order to enhance habitat stewardship programs for the benefit of private landowners. The primary focus of SNO is to facilitate access to knowledge and to bolster public policy support for stewardship of all habitats, wetlands included.

In 2010, SNO produced a discussion paper addressing approaches for land management strategies across Ontario, including wetland management. The paper explores a collaborative approach to climate change adaptations and a movement towards a sustainable landscape across Ontario.

SNO's annual forum, held in June each year, is an excellent opportunity for representatives from a variety of stewardship organizations to network, share information on provincial stewardship issues, generate solutions to common challenges and identify opportunities to collaborate.

To learn more about the forum and about the SNO, visit:
www.stewardshipnetwork.ca.

Mute Swan Cygnets Simon Dodsworth

Rebecca Zeran

Water Flow Control Across Borders

Waters know no borders. In North America, water flows across the Canadian-United States (U.S. border in rivers, streams and even lakes. Cooperation between our two nations is needed to address issues affecting such waters. The IJC was created to help governments find solutions to shared problems.

The IJC reviewed the operation of structures controlling the water flows and levels of the Lake Ontario-St. Lawrence River (LOSL) system, and developed regulation plan options. This was completed in 2006 following a five-year study. The review considered environmental sustainability, with a focus on the ecological integrity of wetlands, while also recognizing the interests of multiple stakeholders.

EC, in partnership with the U.S. government and regional partners, completed extensive studies to quantify the relationships between wetland plant and bird assemblages, and hydrology in the LOSL system. The success of these collaborative studies demonstrates the benefits of building partnerships in achieving a common goal.

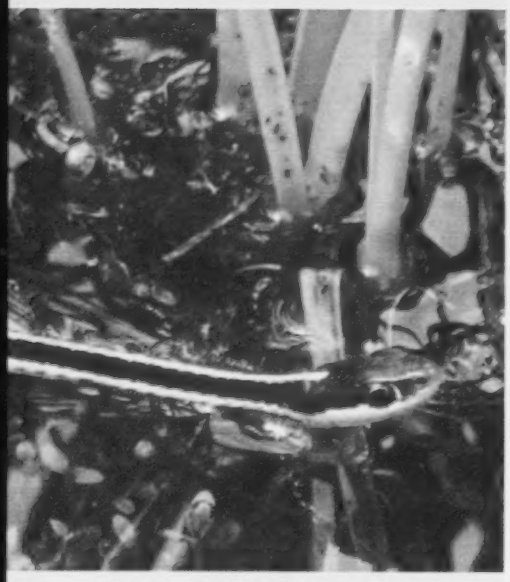
Following the study, the IJC proposed revised water regulation plans. However, in 2008 the proposals were rejected by the public for differing reasons; some interests insist there be more environmental benefits for Lake Ontario while others argue to maintain the status quo. In response, the IJC has convened a working group that provides advice on how to manage water levels and flows of the LOSL system, while defining and protecting environmental, social and economic interests of the area in compliance with the Boundary Waters Treaty.

The working group consists of senior officials from the IJC and the federal and provincial/state governments of Canada, U.S., Ontario, Quebec and New York. Members are responsible for forming binational partnerships advised by technical subcommittees who provide expertise in their respective jurisdictions.

As the working group wades through any concerns raised by the public, the core mandate for the group remains how to consider the environment, including wetlands, in regulation planning.

For more information visit: *www.losl.org*.

STRATEGY 8 Evaluate the Program



Eastern Ribbon Snake. Sam Brinker

Coordinate and integrate all the GLWCAP initiatives with other ongoing programs that affect Great Lakes wetlands, in particular activities associated with relevant international conventions and agreements.

Any successful program adapts to changes and responds to outcomes. By evaluating the strengths and weaknesses of the GLWCAP as we go, we ensure that our initiatives are accomplishing the goals that were set, and that we are meeting the needs of the people and agencies we aim to serve.

Milestone		Percent Complete by 2010 ("+" indicates 'ongoing')
8.1	Share partners' annual workplans within implementation team.	100% +
8.2	Evaluate and report on progress/accomplishments on meeting GLWCAP milestones by 2010.	100%
8.3	Utilize adaptive management to guide future GLWCAP direction through regular program reviews by all implementation team partners.	100% +

Summary

Phase Three has been extremely successful for the GLWCAP partners. Securing 14,182 hectares of land and enhancing, creating or restoring more than 9,505 hectares means the protection of something bigger – ecosystem health and human health. By working to maintain hydrological connectivity throughout and among watersheds, GLWCAP partners are ensuring a better future; one that connects ecosystems and will help to mitigate the potential effects of climate change.

GLWCAP continues to evolve and adapt, partly in response to internal monitoring, but also in reflection of the public's attitude toward conservation, the environment and, specifically, wetlands. Environment has become a primary concern for Ontarians, allowing the GLWCAP partners an opportunity to draw on public support. Strategies have been teased out with better focus and the measures of success have also been refined.

The shift in the plans focus towards stewardship and locally protecting and restoring existing wetlands, is an important one that reflects a shift in public attitude and support. The long-term care of our ecosystems will prepare us for future changes in population, climate and the availability of freshwater. The addition of Ontario Stewardship to the GLWCAP team has helped to make great strides in this area. Stewardship provides opportunities for landowners from individuals to municipalities to become actively involved in wetland conservation. It is a fully engaging aspect of conservation with lasting beneficial impacts.

A lot of effort has also been put into supporting local planning initiatives, working to protect all of our wetlands in the Great Lakes Basin. Municipalities, conservation organizations and individuals are among the groups that benefit from the support that GLWCAP partners' collective expertise offers.

Stewardship and local planning support combine to build a bottom-up focus that meets with top-down policy initiatives by higher levels of government; local efforts fill the gaps that policy cannot cover. These shifts have helped to educate and involve more people in wetland conservation, creating a more holistic approach that is clearly effective.

Marsh Marigold. Stephen May

Spring Peeper. Sam Brinker

Looking Ahead

Stewardship will continue to be a primary focus of the GLWCAP into Phase Four, but not the only one. A 'big picture' approach to wetland conservation has been evolving and will continue to do so. As scientific knowledge about wetlands and watersheds advances, the focus on hydrological connectivity becomes an even more important consideration in all of the GLWCAP's strategies. Connectivity will help to ensure that important wetland functions are maintained, functions that help protect our freshwater resources. It will also help us to better adapt to the effects of climate change. In Phase Four, climate change will be an important consideration in all work of the GLWCAP partners. And the next phase will continue on a long tradition of the successful coordinated delivery of wetland conservation efforts in the Great Lakes Basin.

Deciduous swamp. Sam Brinker

Contacts

Conservation Ontario
120 Bayview Parkway, Box 11
Newmarket, ON L3Y 4W3
Tel: (905) 895-0716
Fax: (905) 895-0751
Web site: www.conservationontario.ca

Ducks Unlimited Canada (Barrie)
740 Huronia Road, Unit 1
Barrie, ON L4N 6C6
Tel: (705) 721-4444
Fax: (705) 721-4999
Web site: www.ducks.ca

Environment Canada
Canadian Wildlife Service
4905 Dufferin Street
Toronto, ON M3H 5T4
Tel: (416) 739-5829
Fax: (416) 739-5845
Web site: www.ec.gc.ca

Nature Conservancy of Canada
110 Eglinton Avenue W., Suite 400
Toronto, ON M4R 1A3
Tel: (416) 932-3202
Fax: (416) 932-3208
Web site: www.natureconservancy.ca

Ontario Ministry of Natural Resources
300 Water Street
P.O. Box 7000
Peterborough, ON K9J 8M5
Tel: (705) 755-2000
Web site: ontario.ca/mnr

Ontario Nature
214 King Street West, Suite 612
Toronto, ON M5H 3S6
Tel: (416) 444-8419
Fax: (416) 444-9866
Web site: www.ontarionature.org

Bogbean Buckmoth. Regina Varrin

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